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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,660	07/21/2003	Takashi Yamaguchi	2018-743	3836

23117 7590 07/10/2008
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EXAMINER	
CECIL, TERRY K	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
07/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,660	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Mr. Terry K. Cecil	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10,11,17-30 and 35-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 10-11, 17-30 and 35-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

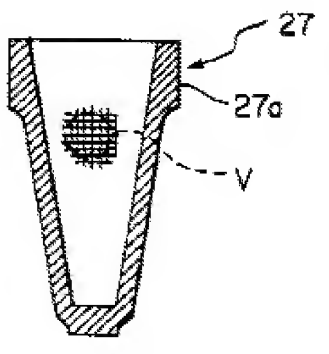
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

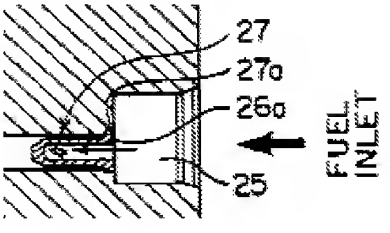
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1, 3, 10-11, 17, 19-20, 22, 29-30, 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi et al. (U.S. 6,190,139 B1) in view of Verlag (US Publication XP-000766379). Isozumi teaches an injector comprising a



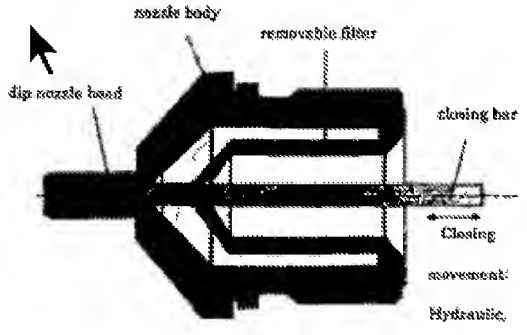


filter within a bore hole of an inlet of fuel injector (figure 1). The filter 27 includes an inlet section 27a (fixed in the peripheral surface of the passageway of the bore hole), a closed end, and a filter section therebetween. The filter is formed such that a tubular passage exists between the filter section and the inner surface of the bore. Because of the shape of the sides of the closed end, the cross-sectional area between the outer surface thereof

and the inner surface of the bore (at the closed end) gradually increases in a downstream direction. The end is considered to be *approximately* conically-shaped, the diameter thereof increasing in a fluid flow direction [as in claim 3].

Since the high pressure pump (and the filter) is connected to an injector (as taught in col. 3 lines 45-52), the injector can be said to "comprise" the filter and the housing thereof, as claimed.

However, Isozumi fails to disclose a tubular fluid passage that has a cross-sectional area equivalent to or smaller than a summation of cross sectional areas of the holes at every point along the length of the filter section. However, such is taught by Verlag (XP-000766379):

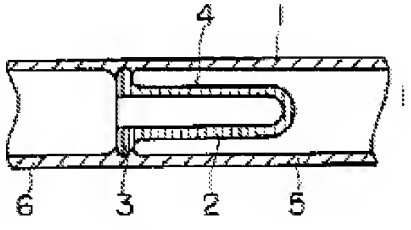


Verlag teaches filters boreholes to have a total cross-sectional area that is considerably greater than the borehole of the machine nozzle in order to reduce *to a minimum* the pressure loss—also in the case of high injection velocities [as in claims 1, 10-11, 17, 19-20, 22, 29-30, 35-38]. In order to have *a minimum pressure loss*, the skilled man would understand the borehole of which Verlag speaks to be the entire borehole passage through the nozzle body. The total cross-section of the filter boreholes is larger than all cross-sections of the borehole passage through which the

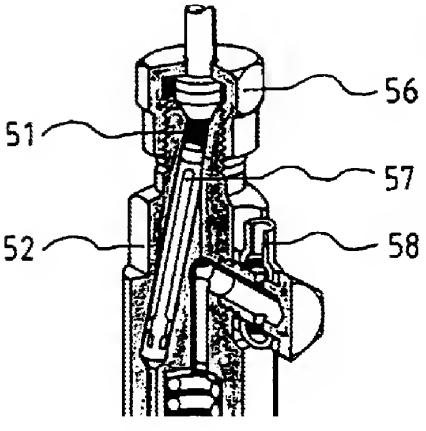
fluid flows. Note that another translation of the Verlag reference is included herewith. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Isozumi in view of Verlag (XP-000766379), since Verlag teaches the benefit of minimizing the pressure loss at high velocities of supplying the solution.

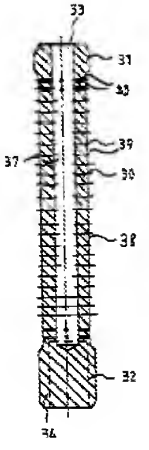
3. Claims 1-3, 10-11, 17-22, 29-30 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-269316, hereinafter '316, in view of GB 2324571, hereinafter '571. '316 teaches a filter including a hemispherically-shaped closed end, an inlet section, and a filtering section 2 therebetween and the claimed flow configuration. He doesn't teach the claimed relative sizing between the tubular passage cross-section and the total filter pore cross-sections.

closed end.



However, such is taught by '571.



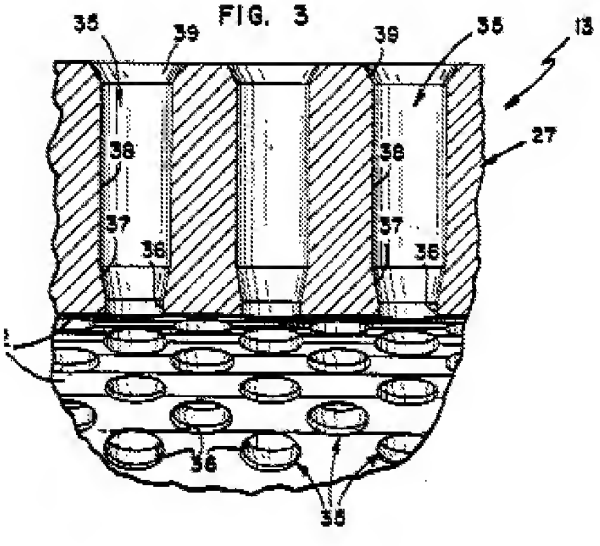


> In the case of all of the illustrated exemplified embodiments the entire orifice cross-section of all orifices disposed in the filter element is larger than or equal to the cross-section of the fuel duct.

The filter is placed in the fuel duct of an injector—as described in e.g. his claim 1.

It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the entire cross-section of all the orifices of the filter section of '316 to be larger than the cross section of the fuel duct as taught by '571, since '571 teaches the benefit of the slightest possible flow resistance against the fuel (page 5, last line to page 6, line 4).

4. Claims 4-8 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EITHER OF Isozumi in view of Verlag as applied above *OR '316 in view of '571, as applied above* and in further view of Neuman (U.S. 5,062,952).



Neuman teaches filter openings having the claimed tapers, steps to a taper (e.g. that from straight bore 36 to tapered bore 37), and different shapes and combinations of shapes [as in claims 4-8]. As explained above, the filter of Isozumi is in an inlet of an injection [as in claim 13]. It is considered that it would have

been obvious to one ordinarily skilled in the art at the time of the invention to have the filter section with filter opening design of Neuman in the invention of modified Isozumi or the modified '316, since Neuman teaches the benefits of preventing clogging of bores (col. 4, lines 31-37) and using a smaller mass of filter element with the same number of openings without weakening the filter element (col. 4, lines 50-55).

As for newly added claims 23-25, it is pointed out that the arrangement of the circular holes of Neuman also includes holes disposed at a substantially regular interval along a substantially helical line.

5. Claims 2, 18, 21, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi in view of Verlag as applied above, and in further view of Stamstad (U.S. 4,882,055). As shown in his drawings, Stamstad teaches a hemispherically-shaped closed end [as in claim 2] and a configuration that would result in a tubular passageway of substantially constant cross-sectional area [as in claims 18 and 21]. He also teaches circular openings [as in claims 23 and 26]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the filter of the modified Isozumi to be configured as in Stamstad, since Stamstad teaches the benefit of a filter that is molded shaped and ready for use without the need for further processing and that allows for a filter that is easily cleaned (col. 6).

6. Claims 24-25 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over '316 in view of '571 and in further view of JP 2002331209, hereinafter '209. As shown, e.g. figure 3, the

helical line of pores is shown in a substantially regular interval. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the pores of the modified '316 to be helically-arranged, since '209 teaches the benefit of bores that are continuously and easily formed and for use in the same environment—fuel filtering in an injector.

7. Claim Objection: remove the extra colon in the first line of claim 1.

Response to Arguments

8. In order to apply reference GB '571 mentioned in the interview summary of 1/10/2008, the finality of the previous office action has been withdrawn. In addition, new claims 35-38 has been examined.

9. Applicant's arguments filed 1-31-2008 have been fully considered but they are not persuasive. Concerning Verlag, in order to have *a minimum pressure loss*, the skilled man would understand the borehole of which Verlag speaks to be the entire borehole passage through the nozzle body. The total cross-section of the filter boreholes is larger than all cross-sections of the borehole passage through which the fluid flows. Note that another translation of the Verlag reference is included herewith. Concerning '571, the filter is positioned within the fuel duct, as explained in claim 1 of the reference.

10. Contact Information:

- Examiner Mr. Terry K. Cecil can be reached at (571) 272-1138 at the Carlisle campus in Alexandria, Virginia for any inquiries concerning this communication or earlier communications from the examiner. Note that the examiner is on the increased flextime schedule but can normally be found in the office during the hours of 8:30a to 4:30p, on at least four days during the week M-F.
- David R. Sample, the examiner's supervisor can be reached at 571-272-1376, if attempts to reach the examiner are unsuccessful.
- The Fax number for this art unit for official faxes is (571) 273-8300.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Mr. Terry K. Cecil/
Primary Examiner, Art Unit 1797

TKC
July 12, 2008